RIVER STAGES AND FLOODS FOR SEPTEMBER 1945

By BENNETT SWENSON

The month of September was noteworthy for its excess of precipitation over the entire country, except for a block of states from Texas west-northwestward to California. The monthly totals were the greatest of record in Missouri, Oklahoma, and West Virginia, while in several other states it was the wettest September in the last 10 to 20 years. Arkansas had the largest total since 1913, and the second greatest. Rainfall was decidedly deficient in California, Arizona, and New Mexico, where the percentages of normal were only 28, 20, and 57, respectively.

The excessive precipitation resulted in record-breaking floods in eastern areas of North and South Carolina and excessive but not extreme flooding in tributary streams in the middle Arkansas and Red River basins. Light to moderately high overflows occurred in some of the streams of Virginia, West Virginia, and eastern Pennsylvania.

Atlantic Slope drainage.—Marked rises occurred in all of the streams from Florida to New England as the result of the excessive precipitation. However, except in North and South Carolina, where previous flood records were broken in the Pee Dee, Cape Fear, and Neuse Rivers, the rainfall was favorably distributed so that extreme flood stages were not general. The Cape Fear River reached a crest of 68.9 feet at Fayettesville, N. C., on September 21, compared to an estimated stage of 68.0 feet in the flood of August 1908. At Cheraw, S. C., the Pee Dee River rose to 49.4 feet on September 19, exceeding the previous record of 47.2 feet for August 1908. A summary of the flood stages of the streams in the Carolinas is given in the table below:

TABLE 1.—*Summary of Provisional Stages of Streams in the Carolinas for Flood of September 1945*

River and station	Flood crest September 1945		Previous maximum flood of record	
	Crest	*Date*	*Stage*	*Date*
Roanoke River:				
Weldon, N. C.	48.8	22	58.0	Aug. 1940
Williamston, N. C.	15.0	26	20.5	Aug. 1940
Tar:				
Rocky Mount, N. C.	13.5	22	15.4	July 1919
Tarboro, N. C.	27.1	24	33.2	July 1919
Greenville, N. C.	19.2	25–26	24.5	July 1919
Neuse:				
Neuse, N. C.	26.0	20	24.8	July 1919
Smithfield, N. C.	26.0	20	26.5	Oct. 1929
Goldsboro, N. C.	26.7	23	25.3	Apr. 1936
Kinston, N. C.	22.4	27	20.9	Apr. 1936
Haw:				
Moncure, N. C.	39.0	18	34.3	Aug. 1908
Cape Fear:				
Fayetteville, N. C.	68.9	21	68.0	Aug. 1908
Elizabethtown, N. C.	43.2	23	39.1	Sept. 1928
Lynches:				
Effingham, S. C.	21.2	22	20.0	Aug. 1908
Pee Dee:				
Cheraw, S. C.	49.4	19	47.2	Aug. 1908
Mars Bluff Bridge, S. C.	31.3	22	29.6	Sept. 1928
Broad:				
Blairs, S. C.	28.8	19	40.0	Aug. 1928
Catawba:				
Catawba, N. C.	24.6	18	35.0	Aug. 1940
Wateree:				
Camden, S. C.	33.9	18	40.4	July 1916

In Maine, rainfall was slightly excessive for the first time since June. Reservoirs were almost full, and river flow was ample.

The rainfall averaged near normal over the Merrimack River basin, with upper portions of the basin receiving amounts well in excess of normal and central and lower portions considerably less than normal. With ample rainfall in the headwaters, hydroelectric run-off requirements kept up to a fairly good level.

Brief floods occurred in the Schuylkill River at Philadelphia, the Chenango River at Sherburne, N. Y., and in the Susquehanna River at Oneonta, N. Y., as the result of heavy rains on September 18. Overflows were light at these points.

Rains accompanying the tropical disturbance of September 17–18, were moderately heavy over the Potomac Basin, with the heaviest amounts over the upper Shenandoah, where 2-day totals of 4 and 5 inches were observed. High floods occurred in the South River at Waynesboro, Va., and moderate flooding in the entire Shenandoah Basin. The remainder of the Potomac Basin was generally below flood stage except in portions of the South Branch in West Virginia and the main Potomac from Harpers Ferry, W. Va., to Washington, D. C., where some overflow of lowlands occurred.

A series of showers beginning on September 13, and culminating in heavy rains on September 17, resulted in rises in the James River. Flooding, mostly light to moderate, was confined to the lower portion from Bremo Bluff, Va., downstream.

A cold front moving into the western and central portions of the Carolinas on September 14 was attended and preceded by heavy rains. The front moved very slowly eastward, becoming nearly stationary near the coast on the morning of the 17th, with moderate to heavy rains continuing over the interior and extending to the coast. On September 17, a tropical disturbance crossed the South Carolina coast line southeast of Charleston and moved slowly northward across the central Carolinas. While much diminished in intensity, the hurricane caused excessive rains from central and eastern South Carolina northward into southern Virginia.

The earlier rains resulting from the slow-moving cold front were by themselves sufficient to cause floods. The rains attending the passage of the hurricane fell on rain-soaked ground and drained into rivers which were already at flood stage, causing major floods in all rivers from central South Carolina northeastward through North Carolina. Several stations in the upper Cape Fear River basin and in eastern South Carolina reported 5-day totals of more than 12 inches. The excessive run-off and unusually high flooding resulted in considerable crop and property damage.

The rainfall in western South Carolina decreased to less than 2 inches, and the Saluda River just reached flood stage. The Congaree and Wateree Rivers were in moderately high flood. The Roanoke River did not reach extreme flood except that the Dan River at Danville, Va., with a crest stage of 21.3 feet on September 19, exceeded the August 1940 flood by 0.1 foot.

Upper Mississippi basin.—Generally stream flow was above normal, but no overflows occurred except in the Meramec River where a stage 2.5 feet above the flood level was recorded at Pacific, Mo., on September 28. This overflow resulted from a series of heavy rains on September 21, 24–25, and 27–28.

Ohio Basin.— The Ohio River was in pool during the first half of the month, but heavy rains over the basin during the second decade caused the dams to be lowered. Open river conditions prevailed the remainder of the month. The highest stage reached at Cairo, Ill., was 28.1 feet on September 30, which has been exceeded only in three previous years during September.

In the drainage area above Pittsburgh, heavy rains in September caused moderate to high stages during most of the last half of the month. The only station reaching flood stage was Clarksburg, W. Va., on the West Fork

River. At Clarksburg, 12.55 inches of rain occurred during the month. Three stations in the vicinity of Pittsburgh reported monthly rainfall in excess of 10 inches.

On the afternoon and evening of September 23, very heavy local precipitation in Pleasants and Tyler Counties, W. Va., and eastern Washington County, Ohio, produced severe flash floods in several small streams. The greatest damage occurred at Wick, W. Va., where Rush Fork and Walnut Run enter Sugar Creek. The entire town was flooded. Middle Island Creek at Middlebourne, W. Va., rose rapidly, and at its crest, the water was 7 feet deep in the streets. Many homes and buildings were washed away, and considerable damage was done to crops. Rainfall records in the vicinity are as follows: Bens Run, 2.09 inches (total for storm); St. Marys, 4.57 inches in less than 12 hours; Middlebourne, 4.09 inches in less than 24 hours, 3.19 inches in 12 hours, and 1.83 inches in 1 hour.

Excessive rains during the period September 13–19 in the upper New River basin in Virginia and West Virginia produced moderately high flood stages. Rainfall during this period ranged from 4 to over 9 inches in the basin above Hinton, W. Va. About half of this occurred on September 17–18 in connection with the tropical disturbance that moved slowly northward through central North Carolina.

Arkansas, White, and Red basins.—Heavy rains during the last week of the month in southern Kansas, most of Oklahoma and Arkansas, and southern Missouri resulted in extensive flooding. Rivers were generally rising at the close of the month, and although in high flood, no records were in prospect except for near record stages at some points in Oklahoma. The principal streams in flood were the Little Arkansas, Walnut, Cimarron, Verdigris, Neosho, Canadian, Arkansas, and Washita Rivers. Flood stages in the Arkansas River extended from Arkansas City, Kans. to Dardanelle, Ark.

FLOOD STAGE REPORT FOR SEPTEMBER 1945

[All dates in September unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest [1]	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE					
	Feet			*Feet*	
Perkiomen Creek: Gratersford, Pa	8	18	19	11.6	18–19
Schuylkill: Philadelphia, Pa	11.5	19	19	12.6	19
Chenango: Sherburne, N. Y	8	19	19	8.9	19
Susquehanna: Oneonta, N. Y	12	19	20	13.3	19
South Branch: Springfield, W. Va	15	18	19	16.25	19
North Fork: Cootes Store, Va	15	18	18	15.9	18
Shenandoah: Riverton, Va	22	19	19	22.0	19
Potomac:					
Harpers Ferry, W. Va	18	19	20	[2] 18.5	19
Washington (near), D. C	10	18	21	13.9	20
James:					
Bremo Bluff, Va	19	18	20	23.1	19
Columbia, Va	10	18	21	24.5	19
State Farm, Va	12	19	20	15.8	19
Richmond, Va	8	19	20	10.7	20
Dan: Danville, Va	11	17	20	21.3	19
Roanoke: Randolph, Va	21	18	21	28.7	20
Weldon, N. C	31	17	24	48.8	22
Williamston, N. C	10	21	([3])	15.0	26
Fishing Creek: Enfield, N. C	14	18	22	16.0	21

[1] Provisional.
[2] Estimated.
[3] Continued at end of month.

FLOOD STAGE REPORT FOR SEPTEMBER 1945—Con.

River and station	Flood stage	Above flood stages—dates		Crest [1]	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE—continued					
	Feet			*Feet*	
Tar:					
Rocky Mount, N. C	9	17	24	13.5	22
Tarboro, N. C	18	19	27	27.1	24
Greenville, N. C	13	19	29	19.2	25–26
Neuse:					
Neuse, N. C	14	15	25	26.0	20
Smithfield, N. C	13	16	27	26.0	20
Goldsboro, N. C	14	18	([3])	26.7	23
Kingston, N. C	14	20	([3])	22.4	27
Haw: Moncure, N. C	20	16	21	39.0	18
Cape Fear:					
Fayetteville, N. C	35	16	25	68.9	21
Lock No. 2, Elizabethtown, N. C	20	16	28	43.2	23
Lynches: Effingham, S. C	14	17	27	21.2	22
Waccamaw: Conway, S. C	7	17	([3])	{8.8 {11.2	19 29–30
Pee Dee:					
Cheraw, S. C	30	16	22	49.4	19
Mars Bluff Bridge, S. C	17	17	([3])	31.3	22
Black: Kingstree, S. C	12	17	26	16.1	20
Saluda:					
Pelzer, S. C	6	17	18	6.4	17–18
Chappells, S. C	13	18	18	13.5	18
Broad:					
Gaffney, S. C	10	17	20	15.4	18
Blairs, S. C	14	16	21	28.8	19
Congaree: Columbia, S. C	19	17	20	24.3	19
Catawba:					
Catawba, N. C	8	17	20	24.6	18
Catawba, S. C	11	16	20	23.2	19
Wateree: Camden, S. C	23	17	22	33.9	18
MISSISSIPPI SYSTEM					
Upper Mississippi Basin					
Meramec: Pacific, Mo	11	28	28	13.5	28
Ohio Basin					
West Fork: Clarksburg, W. Va	5	18	19	6.4	18
New:					
Ivanhoe, Va	15	18	18	17.25	18
Radford, Va	14	18	18	17.0	18
West Fork: Edwardsport, Ind	12	28	([3])	15.3	30
White Basin					
Black: Black Rock, Ark	14	25	26	15.4	25
Arkansas Basin					
Little Arkansas: Sedgwick, Kans	18			24.1	28
Walnut: Winfield, Kans	23	28	([3])		
Cimarron: Perkins, Okla	11	29	([3])		
Verdigris:					
Independence, Kans	36	{25 {29	28 ([3])	40.2	26
Claremore, Okla	38	27	([3])		
Cottonwood:					
Cottonwood Falls, Kans	9	{28 {29	28 ([3])	9.2 12.0	28 29
Emporia, Kans	20	29	([3])		
Neosho:					
Neosho Rapids, Kans	22	29	([3])		
Burlington, Kans	27	30	([3])		
LeRoy, Kans	23	{29 {30	30 ([3])	23.3	29
Iola, Kans	15	29	([3])		
Chanute, Kans	20	29	([3])		
Parsons, Kans	22	30	([3])		
Oswego, Kans	17	{24 {30	26 ([3])	19.7	25
North Canadian: Canton, Okla	9	28	28	9.1	28
Canadian: Union, Okla	7	30	30	7.0	30
Poteau: Poteau, Okla	21	27	([3])		
Arkansas:					
Arkansas City, Kans	16	28	([3])	19.7	30
Ralston, Okla	16	29	([3])		
Tulsa, Okla	12	29	([3])		
Webbers Falls, Okla	23	28	([3])		
Fort Smith, Ark	22	28	([3])		
Van Buren, Ark	22	29	([3])		
Dardanelle, Ark	22	29	([3])		
WEST GULF OF MEXICO DRAINAGE					
Trinity: Liberty, Tex	24	2	3	24.4	2

[3] Continued at end of month.